

APPLICANT(S): LEVY, Sharon  
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Attorney Docket No.: P-5351-US  
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### AMENDMENTS TO THE CLAIMS

Please amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

1. (Currently amended) A method comprising:  
    recursively calculating by a backward calculation unit state metric vectors  
    from a block of symbols in a predetermined direction;  
    ~~and~~-storing at a first storage area reference vectors corresponding to a  
    selected group of the calculated state metric vectors; and  
    re-calculating in the predetermined direction starting from a stored  
    reference vector of the stored reference vectors at least some of the state metric  
    vectors ~~based on the stored reference vectors~~ and storing at a second storage area  
    the at least some re-calculated state metric vectors.
2. (Canceled)
3. (Canceled)
4. (Previously presented) A method according to claim 1, wherein re-calculating at least  
some of the state metric vectors comprises calculating state metric vectors which were not  
stored as reference vectors.
5. (Previously presented) A method according to claim 1, wherein storing reference  
vectors at the first storage area comprises storing a number of reference vectors equal to  
about the square root of the number of the calculated state metric vectors.

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6. (Previously presented) A method according to claim 1, wherein storing reference vectors at the first storage area comprises storing vectors selected in response to locations of singular functions used in calculating the state metric vectors.

7. (Previously presented) A method according to claim 1, wherein storing reference vectors at the first storage area comprises storing vectors selected in predetermined intervals.

8. (Previously presented) A method according to claim 7, wherein storing vectors selected in predetermined intervals comprises storing reference vectors with equal intervals between them.

9. (Previously presented) A method according to claim 7, wherein storing vectors selected in predetermined intervals comprises storing vectors with intervals of decreasing size between them.

10. (Canceled)

11. (Previously presented) A method according to claim 1, wherein re-calculating at least some of the state metric vectors comprises re-calculating at least some of the state metric vectors using a reverse function of a function used in recursively calculating the state metric vectors from the block of symbols.

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Previously presented) A method according to claim 1, wherein re-calculating at least some of the state metric vectors comprises re-calculating at least some of the vectors using a function used in recursively calculating the state metric vectors from the block of symbols.

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16. (Previously presented) A method according to claim 1, wherein recursively calculating the state metric vectors comprises calculating the state metric vectors using a function which is an approximation of an original function; and wherein re-calculating at least some of the state metric vectors comprises re-calculating at least some of the state metric vectors using a reverse function of the original function.

17. (Previously presented) A method according to claim 1, wherein recursively calculating the state metric vectors comprises calculating the state metric vectors using a function which is an approximation of an original function when the original function is non-reversible.

18. (Previously presented) A method according to claim 17, wherein recursively calculating the state metric vectors from the block of symbols comprises forward calculating of the state metric vectors.

19. (Previously presented) A method according to claim 17, wherein recursively calculating the state metric vectors from the block of symbols comprises backward calculating of state metric vectors.

20. (Canceled)

21. (Previously presented) A method according to claim 16, wherein recursively calculating the state metric vectors comprises calculating a number of vectors substantially equal to a size of an encoding block.

22. (Previously presented) A method according to claim 16, wherein calculating the state metric vectors comprises calculating a number of vectors substantially smaller than a size of an encoding block.

23. (Currently amended) A method comprising:

using a reversible function to calculate~~ing~~ a plurality of state metric vectors from a block of symbols in a first direction;

storing reference vectors selected from the calculated state metric vectors; and

using a reversed function of the reversible function to re-calculate~~ing~~ the state metric vectors from the block of symbols in a second direction wherein, the re-calculation starts from a stored reference vector of based-on the stored reference vectors to substantially re-generating at least part of the calculated state metric vectors.

24. (Previously presented) A method according to claim 23, further comprising re-calculating a first state metric vector from the block of symbols in the first direction after re-calculating a second state metric vector from the block of symbols in the second direction.

25. (Canceled)

26. (Previously presented) A method according to claim 23, wherein storing the reference vectors comprises storing two or more reference vectors calculated in predetermined intervals.

27. (Previously presented) A method according to claim 24, wherein re-calculating the first state metric vector comprises re-calculating the first state metric vector based on a closest stored reference vector.

28. (Canceled)

29. (Previously presented) A method according to claim 23, further comprising:  
dividing the block of symbols into two or more segments defined by respective stored reference vectors; and  
re-calculating the first state metric vector for the two or more segments based on the respective stored reference vectors.

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30. (Previously presented) A method according to claim 29, wherein re-calculating for the two or more segments comprises re-calculating state metrics for some of the two or more segments.

31. (Previously presented) A method according to claim 29, comprising storing a re-calculated reference vector of the re-calculated state metric.

32. (Canceled)

33. (Previously presented) A method according to claim 31, comprising storing the vectors of the re-calculated state metrics of a segment of the two or more segments.

34-42 (Canceled)

43. (Previously presented) A decoder comprising:

a backward calculation unit to calculate state metric vectors from a block of symbols in a predetermined direction; and

a memory having a first storage area to store a reference vector of the calculated state metric vectors and a second storage area to store at least some calculated state metric vectors which are re-calculated from the block of symbols in the predetermined direction based on the stored reference vector.

44. (Previously presented) The decoder of claim 44, wherein a maximal storage space of the memory is able to store less than fifty percent of a predetermined number of state metric vectors.

45. (Previously presented) The decoder of claim 44, wherein the maximal storage space of the memory is able to store less than twenty percent of the predetermined number of state metric vectors.

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46. (Previously presented) The decoder of claim 43, wherein the backward calculation unit implements a plurality of different functions for calculating the state metric vectors.

47. (Previously presented) The decoder of to claim 46, wherein the backward calculation unit implements a pair of functions for calculating the state metric vectors and wherein the pair comprise mutual reverse functions.

48. (Previously presented) The decoder of claim 43, wherein the first storage area is used to store two or more reference vectors in predetermined intervals and the second storage area is used to store the calculated state metric vectors between two reference vectors.

49. (Previously presented) The decoder of claim 48, wherein the first storage area serves also for storing state metric vectors from between two reference vectors.